

# Claims

- [c1] 1. A multi-level seal, comprising:  
a first sealing portion adapted to form a first seal between interfacing surfaces of a first subassembly and a second subassembly; and  
at least one other sealing portion attached to the first sealing portion and partially detached from the first sealing portion to form at least a second seal between at least two other respective interfacing surfaces of the first and second subassemblies at a level different from the first seal.
- [c2] 2. The multi-level seal of claim 1, further comprising a plurality of attachment points to attach the at least one other sealing portion to the first sealing portion at predetermined locations.
- [c3] 3. The multi-level seal of claim 1, wherein the at least one other sealing portion is concentric with the first sealing portion and is attached at predetermined locations to the first sealing portion.
- [c4] 4. The multi-level seal of claim 1, wherein the first sealing portion and the at least one other sealing portion are

concentric and each form a substantially rectangular shaped boundary.

- [c5] 5. The multi-level seal of claim 4, wherein the at least one other sealing portion is joined to the first sealing portion proximate to each corner of the substantially rectangular shaped boundary of the at least one other sealing portion.
- [c6] 6. The multi-level seal of claim 1, wherein the first sealing portion and the at least one other sealing portion are formed from a single layer of a deformable material.
- [c7] 7. The multi-level seal of claim 1, wherein the first sealing portion and the at least one other sealing portion are formed from a single layer of at least one of a cell structured foam, latex or other elastic type material.
- [c8] 8. The multi-level seal of claim 1, further comprising:  
a single layer of material; and  
a plurality of slits formed through the single layer of material to form the first sealing portion and the at least one other sealing portion.
- [c9] 9. The multi-level seal of claim 8, wherein the first sealing portion is concentric with the at least one other sealing portion and each form a substantially rectangular shaped boundary, and wherein the plurality of slits com-

prise:

a first pair of substantially parallel slits; and

a second pair of substantially parallel slits, each substantially perpendicular to the first pair of slits and non-intersecting with the first pair of slits.

[c10] 10. The multi-level seal of claim 9, wherein each of the first pair of slits extends a predetermined length past each of the second pair of slits.

[c11] 11. The multi-level seal of claim 10, wherein the predetermined length is a function of the difference in level between the first seal and the at least one second seal.

[c12] 12. The multi-level seal of claim 1, wherein the first and second subassemblies form a printer cartridge when assembled with the multi-level seal disposed therebetween to prevent leakage of toner at multiple interfacing surfaces at different levels between the first and second subassemblies.

[c13] 13. A multi-level seal, comprising:  
a layer of material; and  
a plurality of slits formed through the layer of material to form a plurality of sealing portions, each sealing portion being adapted to form a seal at different levels within an assembly.

- [c14] 14. The multi-level seal of claim 13, further comprising a plurality of integrally formed attachment points to attach each sealing portion to an adjacent sealing portion at predetermined locations.
- [c15] 15. The multi-level seal of claim 13, wherein each of the sealing portions are concentric and are attached to adjacent sealing portions at predetermined locations.
- [c16] 16. The multi-level seal of claim 13, wherein each of the sealing portions form a boundary having a predetermined shape.
- [c17] 17. The multi-level seal of claim 16, wherein the predetermined shape is one of a substantially circular shape, a substantially elliptical shape and a multisided shape.
- [c18] 18. The multi-level seal of claim 13, wherein the layer of material comprises one of a cell structured foam, a latex or other elastic type material.
- [c19] 19. The multi-level seal of claim 13, further comprising another layer of material.
- [c20] 20. The multi-level seal of claim 19, wherein the other layer of material is an adhesive.
- [c21] 21. The multi-level seal of claim 13, wherein the plural-

ity of slits comprise:

a first pair of substantially parallel slits to form a first pair of opposite sides of each sealing portion; and  
a second pair of substantially parallel slits to form a second pair of opposite sides of each sealing portion,  
wherein the second pair of slits are substantially perpendicular to the first pair of slits and nonintersecting with the first pair of slits.

[c22] 22. The multi-level seal of claim 21, wherein each of the second pair of slits extends a predetermined length past each of the first pair of slits for each sealing portion.

[c23] 23. The multi-level seal of claim 22, wherein the predetermined length of the second pair of slits extending past the first pair of slits for each sealing portion is a function of the difference in level between each seal formed by the plurality of sealing portions.

[c24] 24. The multi-level seal of claim 13, wherein the assembly comprises a printer cartridge.

[c25] 25. A printer cartridge, comprising:  
a first cartridge subassembly;  
a second cartridge subassembly; and  
a multi-level seal disposed between the first cartridge subassembly and the second cartridge subassembly, the

multi-level seal including:

a first sealing portion adapted to form a first seal between interfacing surfaces of the first cartridge sub-assembly and the second cartridge subassembly, and at least one other sealing portion attached to the first sealing portion and partially detached from the first sealing portion to form at least a second seal between at least two other respective interfacing surfaces of the first and second cartridge subassemblies at a level different from the first seal.

[c26] 26. The printer cartridge of claim 25, wherein the at least one other sealing portion is concentric with the first sealing portion and is attached at predetermined locations to the first sealing portion.

[c27] 27. The printer cartridge of claim 25, the first sealing portion and the at least one other sealing portion are concentric and each form a substantially rectangular shaped boundary.

[c28] 28. The printer cartridge of claim 27, wherein the at least one other sealing portion is joined to the first sealing portion proximate to each corner of the substantially rectangular shaped boundary of the at least one other sealing portion.

- [c29] 29. The printer cartridge of claim 25, wherein the first sealing portion and the at least one other sealing portion are formed from a single layer of at least one of a cell structured foam, latex or other elastic type material.
- [c30] 30. The printer cartridge of claim 25, wherein the multi-level seal further comprises:  
a layer of material; and  
a plurality of slits formed through the layer of material to from the first sealing portion and the at least one other sealing portion.
- [c31] 31. The printer cartridge of claim 30, wherein the first sealing portion is concentric with the at least one other sealing portion and each form a substantially rectangular shaped boundary, and wherein the plurality of slits comprise:  
a first pair of substantially parallel slits; and  
a second pair of substantially parallel slits, each substantially perpendicular to the first pair of slits and non-intersecting with the first pair of slits.
- [c32] 32. The printer cartridge of claim 31, wherein each of the second pair of slits extends a predetermined length past the first pair of slits.
- [c33] 33. The printer cartridge of claim 32, wherein the prede-

terminated length of the second pair of slits extending past the first pair of slits is a function of the difference in level between the first seal and the at least one second seal.

- [c34] 34. A method of making a multi-level seal, comprising:  
forming a first sealing portion adapted to form a first seal between interfacing surfaces of a first subassembly and a second subassembly; and  
forming at least one other sealing portion attached to the first sealing portion and partially detached from the first sealing portion to form at least a second seal between at least two other respective interfacing surfaces of the first and second subassemblies at a level different from the first seal.
- [c35] 35. The method of claim 34, further comprising forming the at least one other sealing portion and the first sealing portion attached to one another at predetermined locations.
- [c36] 36. The method of claim 34, further comprising forming the first sealing portion and the at least one other sealing portion from a layer of at least one of a cell structured foam, latex or other elastic type material.
- [c37] 37. The method of claim 36, further comprising forming



a plurality of slits in the layer to form the first sealing portion and the at least one other sealing portion.

[c38] 38. The method of claim 37, further comprising forming the first sealing portion concentric with the at least one other sealing portion and each in a substantially rectangular shaped boundary, and wherein forming the plurality of slits includes:

forming a first pair of substantially parallel slits; and  
forming a second pair of substantially parallel slits, each substantially perpendicular to the first pair of slits and nonintersecting with the first pair of slits.

[c39] 39. The method of claim 37, further comprising forming each of the second pair of slits to extend a predetermined length past each of the first pair of slits.

[c40] 40. The method of claim 39, further comprising forming the predetermined length to accommodate a difference in level between the first seal and the at least one other seal.

[c41] 41. A method of making or refurbishing a printer cartridge, comprising:  
providing a first cartridge subassembly;  
providing a second cartridge subassembly; and  
disposing a multi-level seal between the first cartridge

subassembly and the second cartridge subassembly, wherein the multi-level seal being formed by a method including:

forming a first sealing portion adapted to form a first seal between interfacing surfaces of the first cartridge subassembly and the second cartridge subassembly, and forming at least one other sealing portion attached to the first sealing portion and partially detached from the first sealing portion to form at least a second seal between at least two other respective interfacing surfaces of the first and second cartridge subassemblies at a level different from the first seal.

[c42] 42. The method of claim 41, wherein forming the multi-level seal further comprises:  
providing a layer of material; and  
forming a plurality of slits through the material to form the first sealing portion and the at least one other sealing portion.

[c43] 43. The method of claim 42, further comprising:  
forming the first sealing portion concentric to the at least one other sealing portion and each forming a substantially rectangular boundary, and wherein forming the plurality of slits includes:  
forming a first pair of substantially parallel slits; and  
forming a second pair of substantially parallel slits, each

substantially perpendicular to the first pair of slits and nonintersecting with the first pair of slits.

[c44] 44. The method of claim 43, further comprising forming the second pair of slits to extend a predetermined length past the first pair of slits.

[c45] 45. The method of claim 44, further comprising forming the predetermined length of the second pair of slits extending past the first pair of slits to accommodate a difference in level between the first seal and the at least one other seal.